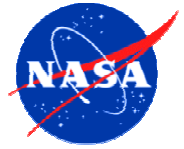


National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, FL 32955



Economic Impact of NASA In Florida FY 2004



Preface

The National Aeronautics and Space Administration (NASA) has a number of Centers that help the Agency pursue the national vision for space exploration and discovery. The Kennedy Space Center (KSC) in Florida is one of those Centers, and as such plays an important role in Agency exploration and discovery efforts.

As good stewards of the responsibilities and resources the nation entrusts to the Agency and its Centers, NASA strives to maximize the benefits produced by activities it conducts at its Centers, including KSC, while minimizing costs. In addition to the technical and social benefits derived from these activities, the total benefit of business NASA conducts also includes significant economic benefits in the locations it operates across the country, including Florida. To help quantify, understand, and communicate this benefit, the Chief Financial Officer (CFO) at KSC annually produces an economic impact assessment of NASA spending in Florida covering three related economic areas: the State of Florida, Central Florida, and local (Brevard County). The CFO typically enlists the assistance of outside economic experts in developing these assessments. This year's assessment uses the results of a study conducted by the Transportation Economics Research Institute, a Mt. Dora, FL based private organization under the direction of Dr. Warren McHone, who is also a Professor of Economics at the University of Central Florida. The study was based on data supplied by KSC and its affiliates. This report of this year's economic impact assessment has been collaboratively produced by Dr. McHone and KSC personnel.

The Office of the CFO is pleased to submit the results of this Fiscal Year 2004 assessment, covering the period from October 1, 2003 through September 30, 2004. The study and methodology used has been reviewed and we concur with the findings of that study, as contained in this report.

Additional copies of the report are available through the Office of the NASA KSC Chief Financial Officer (321) 867-3726.

N.A. Carroll
Chief Financial Officer
John F. Kennedy Space Center

Economic Impact of NASA In Florida Fiscal Year 2004

Produced under the auspices of Office of the Chief Financial Officer
National Aeronautics and Space Administration
Kennedy Space Center

Study conducted by W. Warren McHone, PhD
Transportation Economics Research Institute (TERI) in
Mt. Dora, Florida

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1. Study Highlights

The following is a summary list of highlights from this study.

- *In FY 2004, KSC and other NASA Centers injected \$1.5 billion and \$1.4 billion, respectively, into the Florida and Brevard County economies to support NASA activities at Kennedy Space Center (KSC), mainly space program operations. These amounts represented a 5% increase over their FY 2003 levels.*
- *KSC & Other NASA Centers awarded 821 contracts in Florida in FY 2004. 92% of KSC/NASA spending (including Civil Service wages) was concentrated on-site at KSC.*
- *Total KSC/NASA direct spending was \$1.4 billion in Brevard County, \$25 million in other Central Florida counties and \$72 million in other Florida counties.*
- *The average annual salary for KSC on-site workers was \$60,000 in FY 2004, which was almost twice the salary that was earned by the average Brevard County worker.*
- *The total number of KSC on-site workers in FY 2004 was 14,500. 86% of the total was employed by prime contractors. 90% of the on-site work force lived in Brevard County and another 8.6% commuted from other Central Florida counties.*
- *Workers at KSC received a total of \$871 million in spendable earnings in FY 2004. 99% of these earnings went to workers residing in Brevard and other Central Florida counties.*
- *Commodity purchases by KSC and other NASA Centers in Florida totaled \$629 million in FY 2004. Three-fourths of these purchases were concentrated in four industry categories: Space Vehicle Manufactures, Professional, Scientific & Technical Services, Propulsion Units & Parts for Space Vehicles, and Facilities Support Services.*

- ***In FY 2004 the KSC Visitor Center hosted 901,000 out-of-state visitors. In addition, out-of-state business visitors to KSC generated 8,000 visitor nights in Central Florida. These two sources together provided a \$25 million injection into the State's economy with the overwhelming portion concentrated in Brevard and other Central Florida counties.***
- ***76% of the output impact, 80% of the income impact and 83% of the jobs impact occurred in Brevard County.***
- ***In FY 2004 the total economic impact of NASA in Florida was \$3.3 billion in output, \$1.6 billion in household income and 33,000 jobs. This activity also generated \$166 million of federal taxes and \$76 million of state and local taxes.***
- ***In FY 2004 all KSC/NASA activities injected \$1.52 billion of outside money into Florida's economy. This total consisted of \$890 million in direct earnings payments to households and \$629 million in direct commodity purchases from contractors. 95% of the total injection went to Central Florida businesses and households.***
- ***At the state level each direct job at KSC was multiplied into 2.28 total jobs, each dollar of income was multiplied into \$1.77 in total income and each dollar of total direct spending for commodity purchases and wage payments was multiplied into \$2.16 of output production.***

2. Effects Of NASA Operations At KSC

2.1. Space Shuttle Program (SSP) Return To Flight (RTF)

Throughout FY 2004 Kennedy Space Center (KSC) along with other NASA Centers have devoted enormous energy and resources to returning the nation's manned space flight program to operation. The preparation for the RETURN TO FLIGHT mission, designated STS-114, are well on their way, with an anticipated launch in late spring 2005.



Shuttle Processing

2.2. Other NASA Operations At KSC

In addition to working towards the reestablishing normal Space Shuttle Program (SSP or 'Shuttle') operations, KSC also maintained an active Expendable Launch Vehicle (ELV) schedule by coordinating four missions in FY 2004. Scientific breakthroughs made possible by these ELV missions greatly enhance the quality of life across our nation and around the world. Other KSC work included processing of International Space Station (ISS or 'Station') components, preparing them for launch, preparation of other spacecraft or payloads for launch on both ELVs and Space Shuttles, aerospace technology research and development, and space life science research.



Other KSC Space Program Activities

2.3. Effects On Local Economy

The residents of Brevard County, the larger Central Florida region, and the State of Florida experience a set of benefits from our nation's space programs over and above the scientific and societal benefits mentioned above - the benefits of the jobs and household incomes that are created as KSC and other NASA centers purchase the goods and services needed to support the technical research and launch activities that occur in Florida. As shown in **Exhibit 1**, in FY 2004 KSC and other NASA Centers injected \$1.5 billion and \$1.4 billion, respectively, into the Florida and Brevard County economies to support NASA program operations at KSC. These amounts represented a 5% increase over their FY 2003 levels.

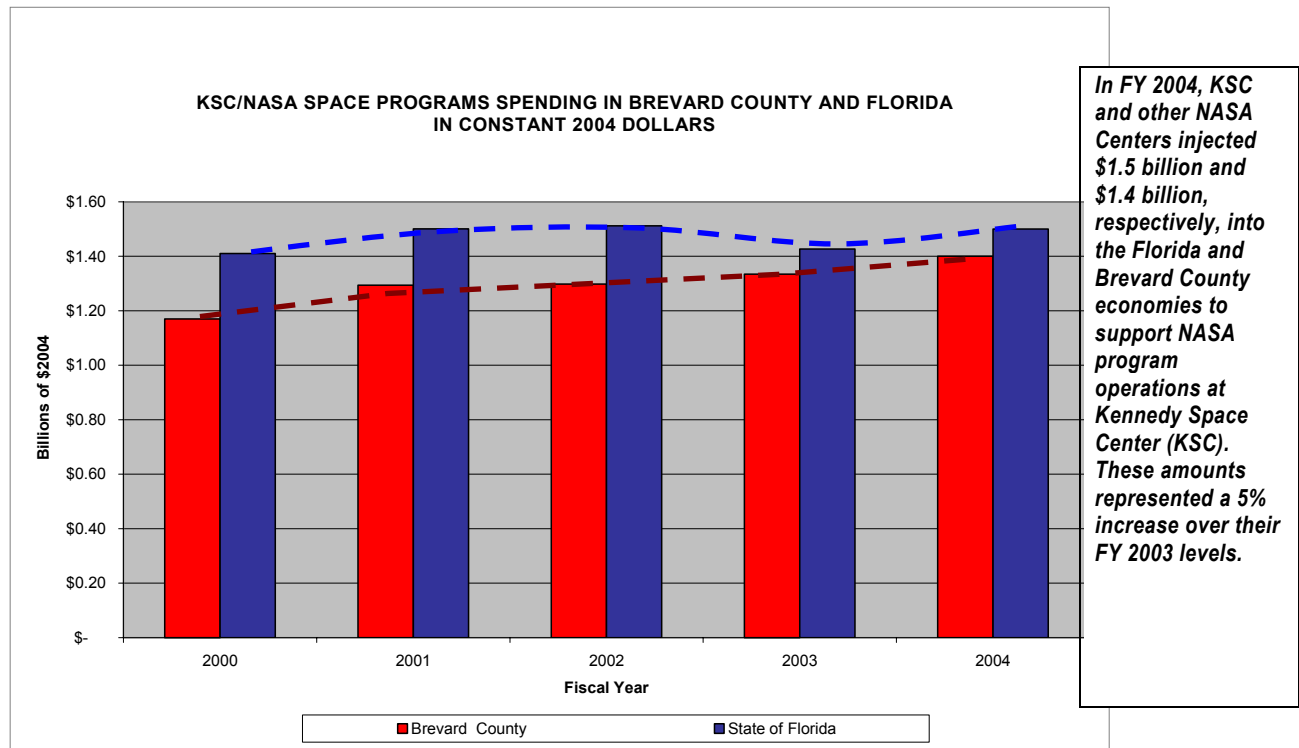


Exhibit 1

In addition to KSC/NASA's spending on space program operations, there are a number of other activities directly associated with KSC that add to its total impact on the economy. These include the local travel expenditures of out-of-state business and government personnel that travel to KSC to conduct business, and sales to out-of-state visitors at the Kennedy Space Center Visitor Center's (KSCVC). The economic impact of all of these activities is presented in this report. The analysis is conducted at three geographic levels – Brevard County, the larger Central Florida Region, which includes Brevard, Flagler, Lake, Orange, Osceola, Seminole and Volusia counties, and the State as a whole.

2.4. Spending In Florida Related To KSC Activities

The primary responsibility of KSC in NASA's programs is the space vehicle launch function. To carry out these responsibilities, KSC managed 475 separate contracts in FY 2004 valued at \$800 million for the fiscal year. While a relatively large proportion (78%) of KSC's total procurement dollars were concentrated in the five largest contracts, over 50% of KSC awards were for small contracts (\$25,000 or less). Eight Other NASA Centers awarded a total of 346 contracts in Florida in FY 2004 with a fiscal year value of \$554 million. The NASA Space Shuttle Program's (SSP), through the Space Flight Operations Contract (SFOC) which is managed at the Johnson Space Center in Texas, spent \$496 million on the KSC performed portion of the contract, which constituted 90% of the other Centers' contracts total.

92% of KSC/NASA spending was for contracts to on-site/near-site contractors and wages to on-site Civil Service and contractor workers. Total direct spending in Brevard County was \$1.4 billion in FY 2004. Direct spending in other Central Florida counties and other counties in Florida totaled \$25 million and \$72 million, respectively.

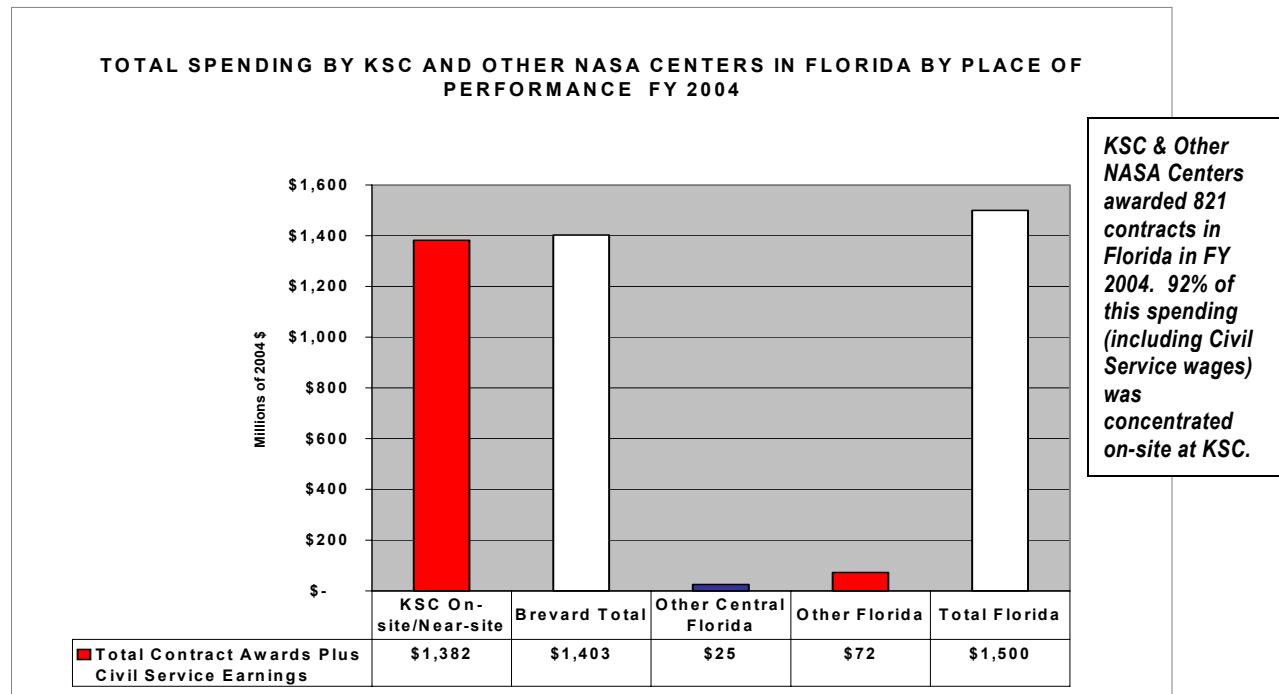


Exhibit 2

2.5. Employment At KSC

There were 14,500 on-site and near-site workers at KSC in 2004. This includes both civil service and contract workers directly involved in support for NASA programs (Shuttle, Station, etc.) and those workers providing institutional support to these programs (facilities maintenance, security and other emergency services, etc.). The overwhelming majority (86%) of on-site workers was employed by NASA prime contractors. The remainder was federal civil service workers employed by KSC and other NASA Centers. As might be expected, most (90%) of the employees at KSC lived in Brevard County. However, as illustrated in **Exhibit 3**, over 1,200 workers commuted from other nearby Central Florida counties, and a small number of workers lived in more distant Florida counties or resided outside the State.

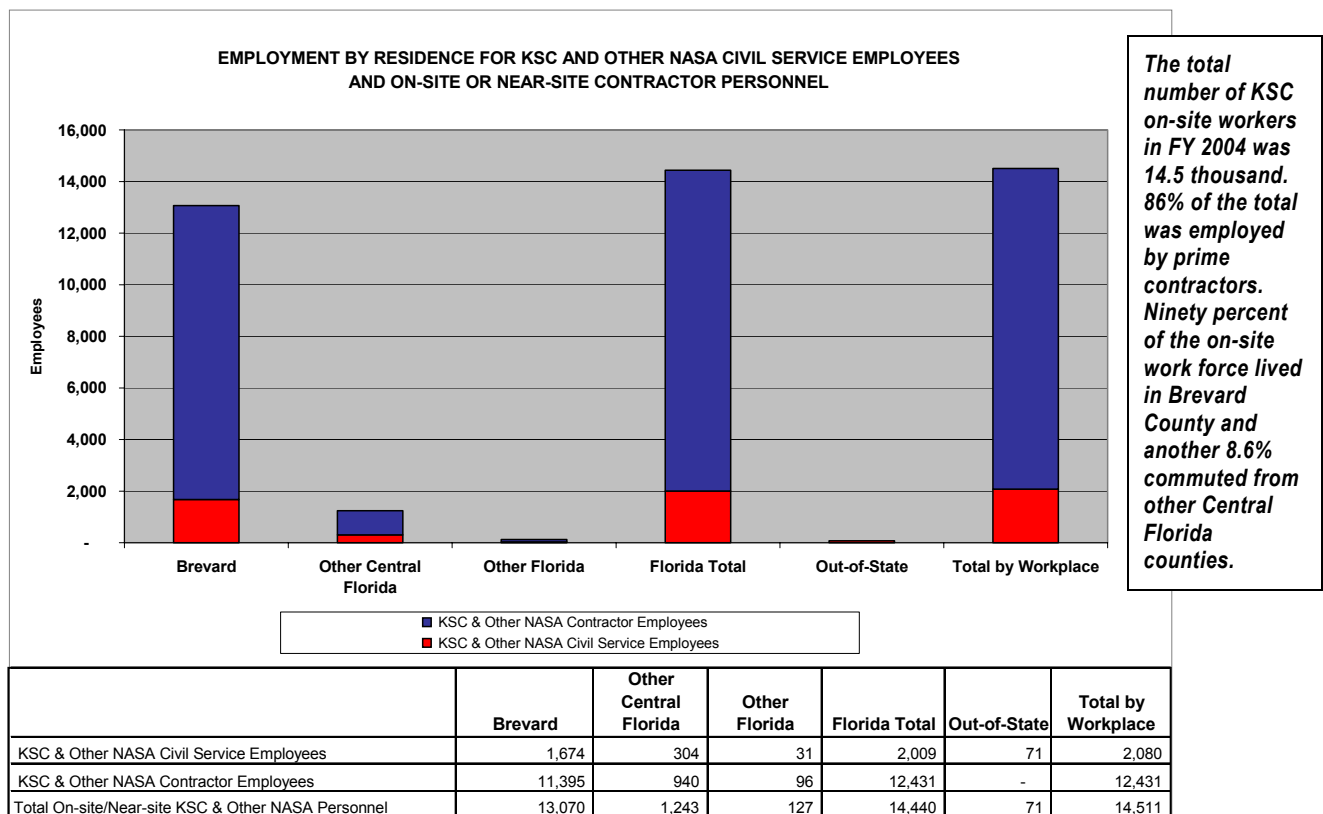


Exhibit 3

2.6. Earnings At KSC

Contract and civil service workers at KSC received \$871 million in spendable earnings in FY 2004 (see **Exhibit 4**). 99% of these wages went to residents of Brevard and other Central Florida counties. A large majority of the workers at KSC are highly trained engineers, scientists, and technicians that command relatively high salaries. Accordingly the average annual salary for the KSC workforce was \$60,000, which is almost twice the \$34,000 salary that is earned by the average Brevard County worker.



Astronaut Pre-Flight Preparations

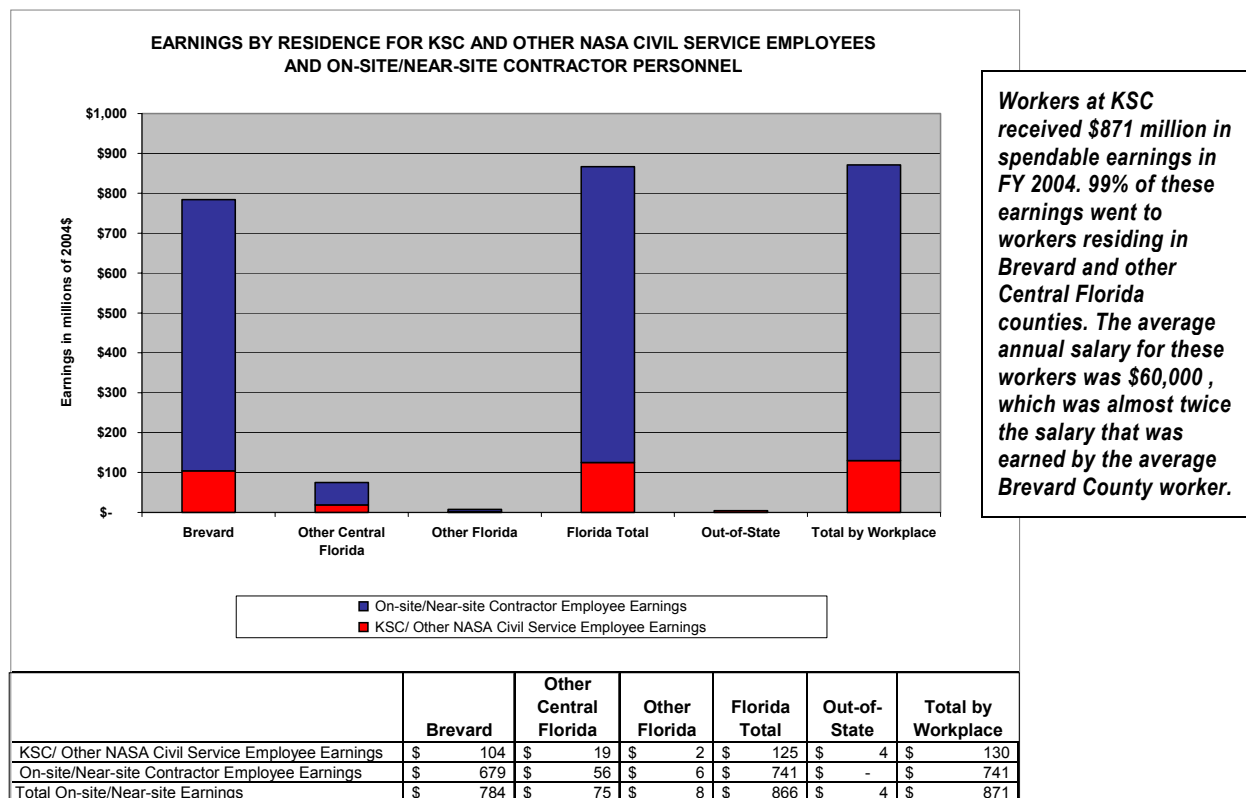


Exhibit 4

2.7. Non-Labor Purchases In Florida

KSC and other NASA Centers' non-labor purchases in Florida totaled \$629 million in FY 2004 and were concentrated in a relatively small number of commodity categories. As revealed in **Exhibit 5**, the top four commodity categories constituted over three-fourths of the total non-labor purchases that were made by KSC and other NASA Centers in Florida in FY 2004. 92% of the total non-labor purchases were concentrated in the top ten commodity purchase categories.

The top commodity category for non-labor purchases in FY 2004 was the \$152 million spent on Space Vehicle Manufacturing. All of the purchases in this category were from the contractor that provides the launch vehicles and packages the payloads for Delta Rocket launches. At \$132 million, Professional, Scientific & Technical Services represented the second largest commodity category. Purchases of Propulsion Units & Parts for Space Vehicles totaled \$101 million in FY 2004. Rounding out the top four categories was the \$81 million in the Facilities Support Services category. These expenditures were for the materials and other non-labor services required by the major on-site contractors that plan and manage launch and space flight control operations and KSC facilities management activities.

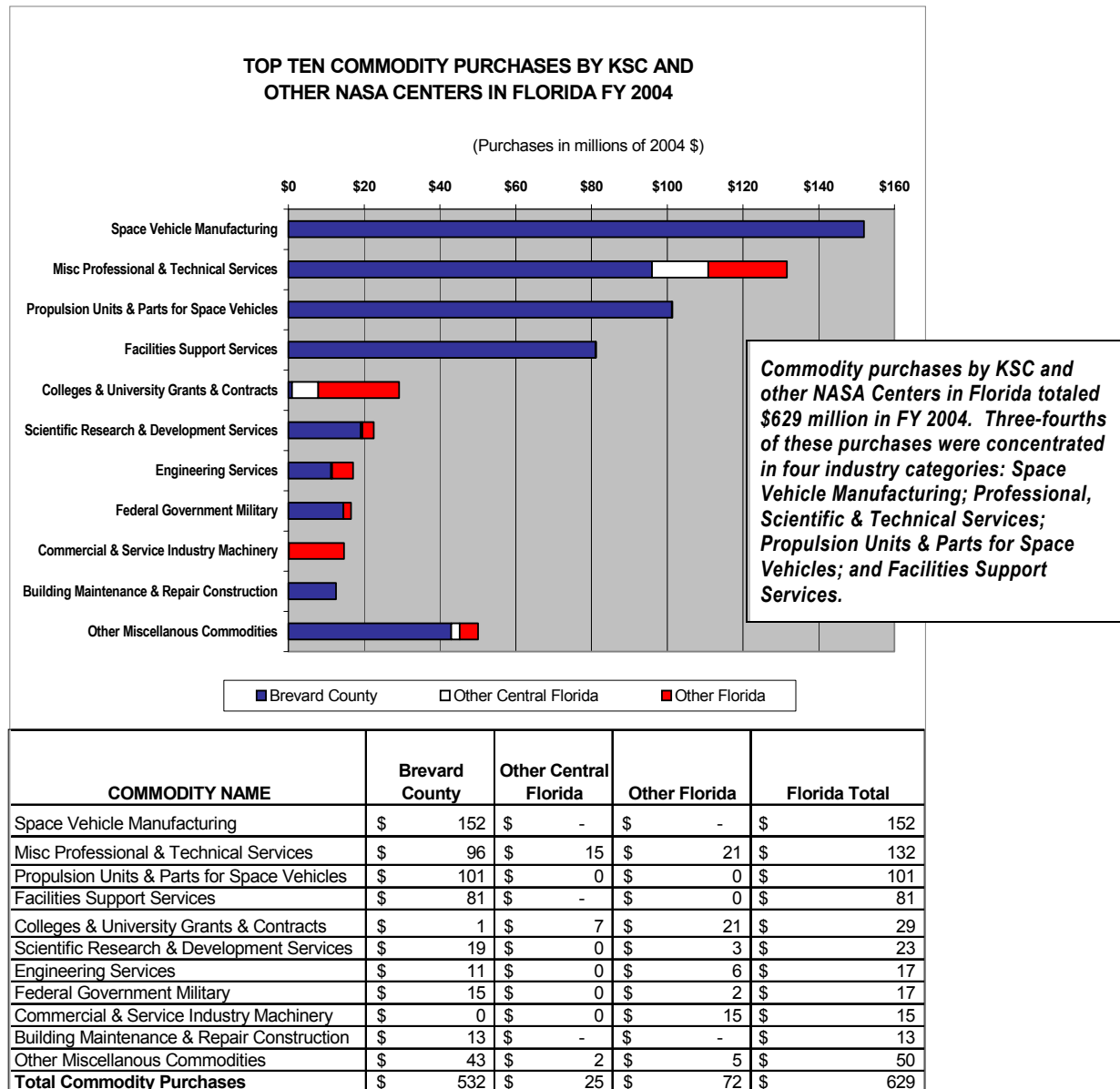


Exhibit 5

3. Spending By Tourists and Business Travelers

KSC's economic presence in Florida is not just limited to the contracts and employees that support NASA programs like Shuttle and Station. In FY 2004, 901,000 out-of-state residents visited KSC's Visitor Center (KSCVC) and spent a little over \$44 million on goods and services provided by the Visitor Center. The Visitor Center had 688 employees which it paid \$19 million in wages. All of these employees were residents of Central Florida. In addition to its payroll expenses, the Center spent \$32 million to purchase the merchandise and services that are required to operate the facility. However, the only relevant part of these purchases for the impact analysis is the \$19 million that were purchased from Florida firms.

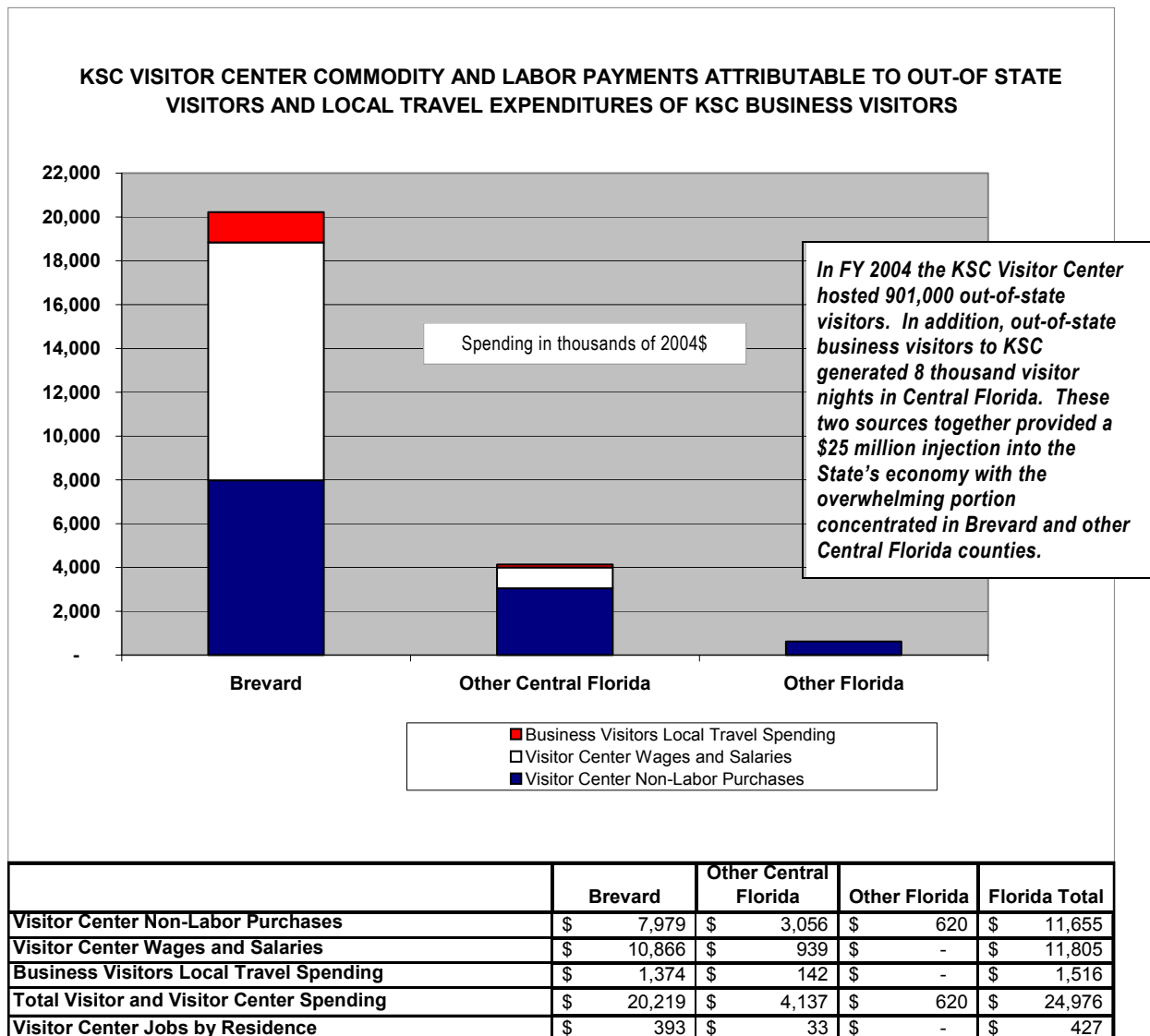


Exhibit 6

In considering the economic impact of Visitor Center expenditures in Florida, it is necessary to focus only on the portion of the purchases that go to Florida firms and residents and the portion of these purchases that are attributable to out-of-state visitors. The logic behind such an adjustment is that the expenditures by in-state visitors do not represent an injection of outside money into the state and local economies. Instead these expenditures are only a transfer of economic activity between sectors within the state or local economy. Based on the geographic distribution of visitors, it was determined that 62% of the total activity at the Visitor Center should be attributed to out-of-state visitors. Consequently, the relevant amounts of KSCVC injections for the impact analysis were \$11.8 million in salaries and \$11.7 million in other non-labor purchases for a total injection of \$23.5 million.



KSC Visitor Center

One other important source of NASA's economic stimulus in Florida is the local travel expenditures of out-of-state business visitors that came to KSC in FY 2004. This includes visitors that came from NASA Headquarters, other NASA Centers and out-of-state contractor personnel. The purpose of the visits includes pre-launch meetings and reviews, general information exchange and a variety of other business functions. It is estimated that there were over 3,471 such business visitors in FY 2004. These visitors generated 7,978 visitor nights in the Central Florida area. Their total local travel purchases for lodging, food, car rentals and other miscellaneous items was \$1.5 million. All of these expenditures represented an injection of outside money into the local economy. The purchases by the Visitor Center attributed to out-of-state visitors and the local travel expenditures of KSC business visitors' resulted in a total injection of \$25 million dollars into the local economy in FY 2004. The details of this injection are show in **Exhibit 6**.

4. Economic Injections Into Florida Economies

The purchases and household income payments that are described in the preceding sections of this study are injections of outside money into the economies of Brevard County, the larger seven-county Central Florida region and the state as a whole. These injections enter the economy through direct purchases of goods and services from contractors and the direct payment of earnings to workers. For the purpose of this analysis, all on-site contractors' expenditures were divided into their wage and non-wage components. The wage portion of these contracts was added to the earnings of KSC and NASA Civil Service workers to arrive at the amount of direct household income received by all on-site workers at KSC. Awards to colleges and universities were also divided into wage and non-wage components with the latter being entered into the analysis as direct household income. **Exhibit 7** shows the total direct commodity purchases and direct household income payments resulting from spending for space flight operations, KSC Visitor Center sales to out-of-state visitors and KSC business visitor local travel spending.

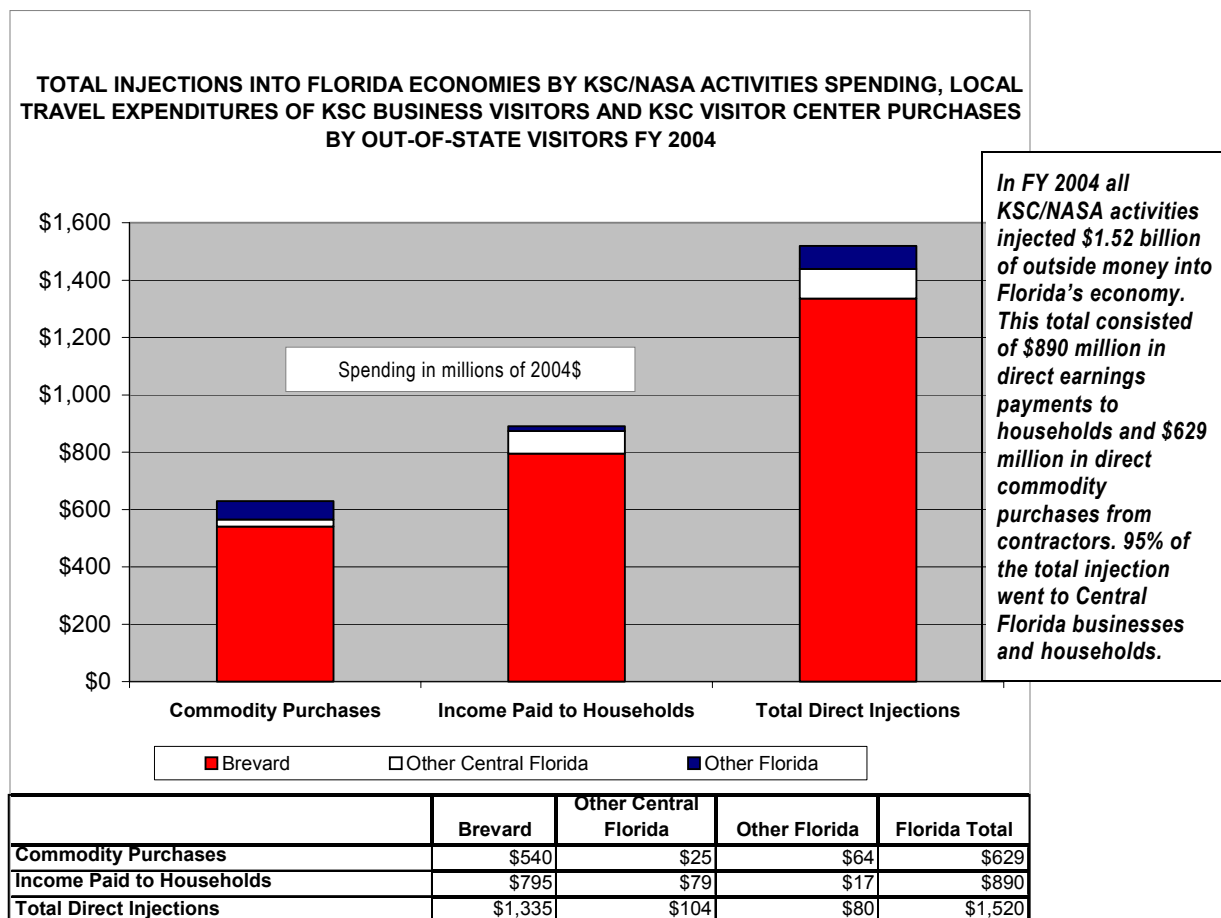


Exhibit 7

The total injection of outside money into Florida's economy in FY 2004 from all KSC/NASA activities was \$1.52 billion. Direct earnings payments to Florida households totaled \$890 million and direct commodity purchases from contractors were \$629 million. 95% of the direct payments went to Central Florida businesses and households.

5. *Total Economic Impact of NASA In Florida*

5.1. Indirect Economic Activity Generated By NASA Spending

The economic activity generated by NASA organizations in Florida begins, but does not end, with the direct purchases of these organizations and the wage payments to their workers. This first round of spending generates a secondary set of economic interactions in the local businesses that supply goods and services to NASA contractors and employees. These businesses, in turn, pay wages to their employees and buy goods and services from their own suppliers and the process continues through many subsequent rounds of purchases. All of these rounds of indirect activity are referred to as the generated impact of the initial KSC/NASA injections into the economy.

The tracing and accumulation of all of the many rounds of generated economic activity that are set in motion by NASA's initial stimulus requires a complex set of economic models that map the structure of the economy and the way in which the many sectors of the economy interact to support each other. These models are referred to as regional input-output models. The specific models used in this study utilize a highly detailed breakdown (500 plus economic sectors) of the economy to trace economic transactions. Separate models were built for Brevard County, the larger seven-county Central Florida region and the State of Florida as a whole.

5.2. Total Economic Impact

The total impact of all KSC/NASA activities in Florida is the sum of the initial injection of earnings and commodity purchases plus the subsequently generated impact of these injections. In FY 2004, this total impact in Florida was \$3.3 billion in output; \$1.6 billion of household income and 33,000 jobs. This activity also generated \$166 million of federal taxes and \$76 million of state and local taxes. As might be anticipated the largest share of the impact—76% of the output impact, 80% of the income impact and 83% of the employment impact—occurred in Brevard County.

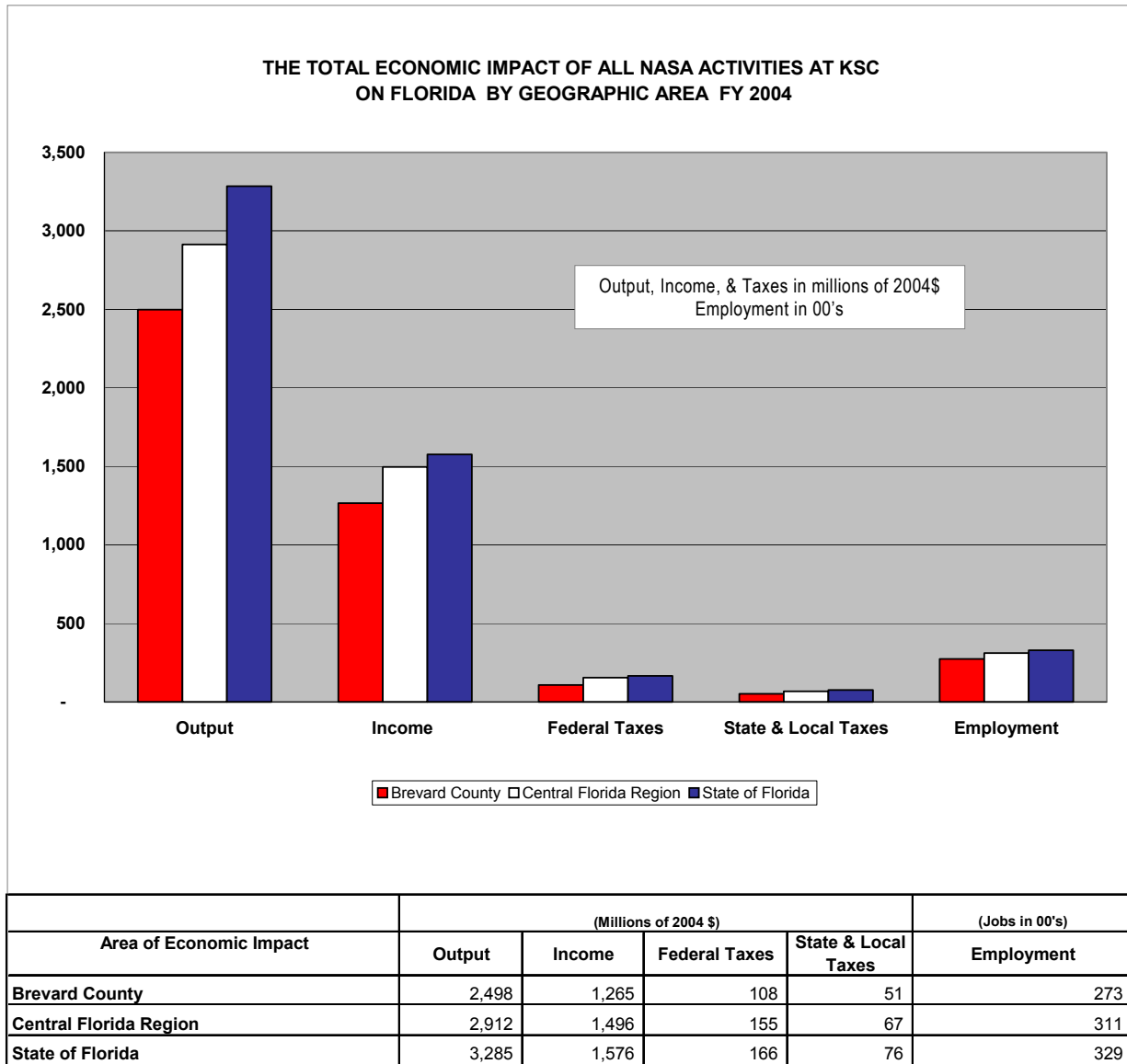
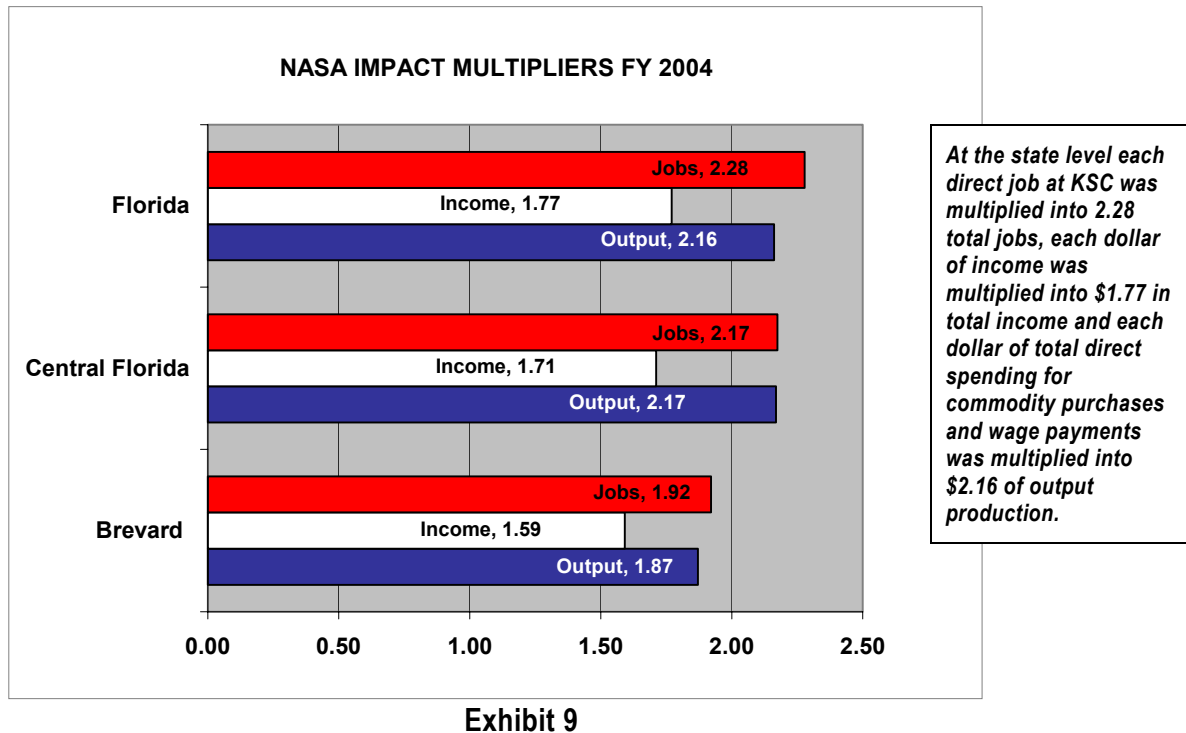


Exhibit 8

5.3. Impact Multipliers

Impact multipliers provide a summary measure of the economic potency of a particular economic activity. Multipliers were calculated in this study for Output, Income and Employment. The Output Multiplier is the total output impact as shown in **Exhibit 8** above divided by the total direct spending for commodity purchases and wage payments to workers. The Income Multiplier is the total income impact shown in Exhibit 8 divided by the initial direct wage payments to KSC/NASA Civil Service and on-site contractor employees. Finally, the employment multiplier is the total employment impact shown in Exhibit 8 divided by the number of on-site employees at KSC.



The multipliers that were calculated for each of the geographic study areas in this analysis are shown in **Exhibit 9**. The jobs multipliers for the State as a whole indicates that each direct on-site job (i.e. Civil Service and contractor employees) at KSC and the Visitor Center was multiplied into 2.28 total jobs throughout the Florida economy. It should be noted that this represents the direct job itself plus 1.28 jobs that were generated through the indirect economic process. The Florida income multiplier indicates that each dollar of direct wages that was paid at the KSC complex resulted in \$1.77 of total income in the State. The output multiplier shows that each dollar of direct total spending for commodity purchases and wage payments generated \$2.16 in total statewide output. Similar interpretations apply to the Central Florida and Brevard County multipliers.

6. Summary

The total amount of dollars that KSC and other NASA Centers injected into the overall Florida economy in FY 2004 was up by 5% over the previous year's level. This growth was associated with an increase in on-site/near-site direct employment as well as an increase in total procurements. KSC/NASA direct spending in Brevard County was also up by 5% over its FY 2003 level. On a constant dollar basis, total spending in the State was back up to its 2001 level. The large number of highly paid employees and the high dollar contracts that are awarded within the State created both a direct effect for state businesses and residents and a strong indirect impact on businesses and households that were not directly associated with the "space industry." In FY 2004 KSC and other NASA space operations and associated activities created a total economic impact for the State of \$3.3 billion in output, \$1.6 billion in income and 33,000 jobs. The total economic impact was highly concentrated in Brevard County with an output impact of \$2.5 billion, an income impact of \$1.3 billion and an employment impact of 27,000 workers. These numbers should leave little doubt that NASA continues to represent one of the most important economic engines in Florida's economic base.

7. Notes

The following are some notes about the study and this report.

Impact Models: The economic impact analysis presented in this report is generated by a set of regional input-output models constructed by the Transportation Economics Research Institute using the Minnesota IMPLAN Groups (MIG) software package. Structural data for the models was also provided by MIG.

Study Areas: Input-output models were constructed for three geographic areas—Brevard County, Central Florida (which includes Brevard, Flagler, Lake, Orange, Osceola, Seminole and Volusia Counties) and the State of Florida.

Data Sources: All data and numbers reported and used in this study are based on reports and data files provided through the Office of KSC's Chief Financial Officer or found on the KSC internet site. Numbers reported in the impact section of the report were generated by the economic impact models constructed for this study.

Methodology and Study Details: The methods of analysis, report assumptions and detailed tables of results are available upon request.